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ABSTRACT

Compiled in this newsletter are activities, viewpoints, reports, and publications of the International Union for Conservation of Nature and Natural Resources (IUCN). The principal article in this issue is a discussion of land use, one of the major forces contributing to the crisis of the human environment in addition to population and pollution. Historical situations, surveys of land capabilities, planning for land uses, control of settlement, economic and social pressures, and traditions regarding land use are all explored. Additional items describe a classification system of national parks and equivalent reserves; World Wildlife Fund (WWF) contributions; IUCN/WWF concern with the fur industry; survey projects of the Seychelles marine environment; conservation and national park conferences and meetings; and new IUCN publications. Special supplements to this edition present the recommendations from two conferences: First International Scientific Conference on Vicuna Conservation, Lima and Nazca, Peru, December, 1971 and the European Working Conference on Environmental Conservation Education, Ruschlikon, Switzerland, December, 1971. (BL)

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IUCN Viewpoint

The Third Factor – Land Use

Two of the major forces that contribute to the crisis of the human environment, population and pollution, have received most attention and publicity in the wealthy countries of the world. This has gone so far that in many countries it is taken for granted that when the "environment" is referred to, it is either too many people or too much pollution that is being discussed. In the general uproar, the possibility that a third factor of equal importance may also be involved is generally ignored. Yet anyone who has worked in the less affluent nations of the world, particularly those in the tropics or arid lands, becomes extremely aware of the importance of this other factor – land use. Failure to control land use, or more specifically land and resource use, may well cause more environmental damage throughout the world than the direct influence of population pressure and pollution combined. A concern for this third factor forces some consideration of its relation to the population factor, since it has been argued that pressure on land, and land abuse are simply by-products of increasing population.

Historically in the technologically advanced countries and today in most nations, environmental damage resulting from misuse of land and its living resources is to be found in areas where, or during historic periods when, land is in good supply relative to the numbers of people. In Australia and the United States for example, the most widespread and severe damage to forest, range and agricultural land took place in the period from 1870 to 1940 when populations were relatively sparse and land resources seemed without limit. Today, densely populated nations, such as the Netherlands, suffer little from misuse of land. Thinly populated countries including Chad, Sudan, Brazil or Bolivia are seriously disturbed by the problem. In the first two, the encroachment of deserts is of major concern; in the others destruction of forest threatens a serious loss of natural resources.

Control over land use necessitates, first of all, *surveys* to determine land capability and those uses for which an area is best suited. It involves, as a next step, *planning* to arrange that lands are used rationally in accordance with their capability. As a third step comes *control*, the ability of governments or private organizations to direct the movements and settlements of people in accordance with the plan. This third step may be accomplished indirectly. Thus, economic incentives to settlement may be provided for those areas where this is desirable, and economic deterrents (e.g. heavy taxation) may discourage the use of other areas, or settlement may be prevented by the establishment and protection of various types of reserves.

The surveys and often the planning stages of the process are well-advanced in many parts of the world. The third, or control, stage is scarcely developed and one may reasonably question whether it is politically or socially feasible even in countries where the authority to carry it out is clearly vested in the government. A country on the edge of the Sahara, for example, could control its nomads, but often this can be done only at a severe risk of civil war. A nation can forbid people to develop squatter's settlements on public or private land at the edge of the city, but enforcement of the directive could be carried out only at the risk of revolution. In the humid tropics the clearing and settlement of government land by peasants goes on whether it is legal or not, and in many countries, any land, unless clearly fenced and occupied, is considered to be available to all who care to use it. Techniques for controlling land use are well developed in countries, such as the United States, where planning and zoning authority is vested in governments and a variety of legal or politico-economic devices for discouraging undesirable use of land are in existence. Yet, even there, suburbs continue to spread where planners do not want them; coastal lands and resources are badly abused; forests and pastures are still cleared for misplaced agricultural endeavours, and so on.

The economic and social pressures leading to the land-use crises are well known. One is the "illusion of land abundance". Where land and living resources seem relatively abundant, with respect to population, it is a temptation to encourage their rapid exploitation to produce immediate income. The long-term future of such areas seems secondary so long as this illusion persists. Second is the effect of tradition. Traditional ways of life, nomadism or slash-and-burn agriculture, for examples, are adapted to a world where people were few in number and new land could always be found while exploited land was recovering from abuse. Their practitioners are slow to become aware that these conditions no longer exist, and find difficulty in changing their ways. It is only when a problem becomes obvious that effective action is taken towards its solution. Pollution is all too obvious in the developed world. The effects of misplaced use of land are now becoming increasingly obvious in the less developed regions. But old ways of viewing the environment still persist.

There is a clear need for social and behavourial scientists and legal experts to spend much more time on this problem, particularly as it relates to the developing world. It is not enough to give governments the legal framework within which they can control land use; they must also be given effective means for educating their people in the need for, and value of, such control for their own long-term welfare.

It will be a dreary prospect for the future if control over land use is not exercised, even assuming that pollution and population growth are controlled in the technologically advanced nations. The prospect is one of deserts spreading into former grasslands and woodlands, of erosion stripping the soils from tropical mountains, of forests and wildlife disappearing from once heavily wooded regions of the world. One can only hope that delegates to the Stockholm Conference and other international meetings on the environment can take a little time from their debate on global pollution to consider how best to halt the degradation of the lands and living resources of the earth.

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The classification of national parks and equivalent reserves

Considerable attention is being given by the IUCN Secretariat to the task of conserving biotopes throughout a wide range of climatic zones, particularly in connection with continuing the IBT/CT check-sheet survey. It will be recalled that one of the objects of that survey was to examine the extent to which existing national parks and other reserves covered the gamut of biotopes warranting conservation action.

Specific attention will be given to this aspect in preparing the proposed loose-leaf edition of the UN List of National Parks and Equivalent Reserves. It is clear that the new version of the List will have to include much more ecological data if it is to be an effective tool for the task of conservation of natural and cultural areas.

In reviewing the contents of the existing List it has become clear that few existing parks conform to the ideal definition of a national park adopted by IUCN at the 10th General Assembly (New Delhi, 1969). There is a broad spectrum of types of reserves ranging from the managed landscapes of the German "naturpark" to those which are strict nature reserves. In some of the better known national parks activities go on, such as sport fishing in U.S.A. parks, grazing or hunting in other reserves, which do not conform to the ideal. Indeed, it seems that the New Delhi definition meets only part of the requirement in relation to the pragmatic task of dealing with the wide range of existing national parks.

This suggests the need for a more comprehensive classification system. Dr. Raymond F. Dasmann is currently looking into this topic and will welcome comments. In a paper for the AAAS Symposium on Research in the National Parks (Philadelphia, USA, 28–29 December, 1971) he points out that the purpose which has lead to the setting aside of the area is an important element in such a classification and that there are several goals to be examined:

(1) to protect natural communities and wild species;
(2) to protect outstanding natural landscapes, scenic wonders and geological formations;
(3) to preserve certain man-made structures or formerly occupied sites, and their settings, for their anthropological, archeological or historical interest;
(4) to maintain landscapes of unusual charm or value created by man particularly in view of the disappearance of those ways of life responsible for their creation;
(5) to provide opportunities for people to develop an understanding of the values of the above and to enjoy outdoor recreation in natural surroundings.

Depending on the type of ecosystem that is protected and the scientific interest attached to it, human intervention and management is required at different levels, according to our desire that ecosystems evolve naturally, or are to be fixed at a given stage of succession or to favour a species which may be threatened or fragile.

Dr. Dasmann proposes two main classes of national parks and equivalent reserves: natural reserves (Class I) and cultural reserves (Class II).

Natural reserves have as a main objective the protection of nature, and may be divided into several categories, depending on their purpose and the degree of human use and management, that would permit realization of that purpose.

The first category would be essentially a strict nature reserve in which ecosystems are to be allowed to evolve naturally, without human intervention, even if this means their modification by natural fires, or other natural disturbances.

In the second category, human impact through management is necessary to perpetuate the protected area or one of its species. Examples would be areas of successional vegetation, or species that require special management for their protection.

The third category would be essentially a wilderness recreation reserve and would be managed only to the degree needed to permit limited visitation while maintaining its wilderness character.

In the fourth category, more general public recreation would be provided for and greater modifications might be made to allow more intensive use by visitors, but the protection of nature would remain the first objective.

The second class: cultural reserves, would include all sites modified by man, that have high archeological, aesthetic or scientific value and need protection. They could include villages, farmlands, and even towns. Pastoral or agricultural activities and other forms of land use would be continued, but changes in land-use that would be disruptive to the landscape would not be allowed.

Some of the UK national parks, and many of the nature parks of the Federal Republic of Germany would be in this class. Many categories may need to be developed that might, for example, be based on the main character of the protected area (archaeology, landscape, history, etc.) or on the intensity of the use.

The two classes of reserves include only areas where protection of nature, or of cultural sites and landscapes is the main objective. Areas mainly designed for exploitation: wood production, cattle or game cropping, intensive recreation use, water reserves etc. would not fit into these classes.

Examination of the present list indicates that further information will be needed on the purpose of the reservation and the intensity of use and management, if any such classification system is to be brought into use in relation to the list. IUCN will be contacting park administrators for information on these points.

The implementation of these tasks of revision will be done by the combined effort of the IUCN Secretariat and the team at Brussels. Professor Jean-Paul Harroy will continue to give general direction to the work.

New IUCN Publications

The following publications have been received from the printers and may be ordered from IUCN Headquarters in Morges. Prices listed are in US dollars.

IUCN Publications New Series

5 Volumes resulting from the 11th Technical Meeting, New Delhi, November 1969.

No. 17 – Ecology Commission Sessions $5.00
- A. Conservation in land-use planning; soil and water resources, especially in mountain regions, wildlife resources and forestry.
- B. Effects of pollution in natural ecosystems.
- C. Some aspects of wildlife utilization and management.
- D. International Biological Programme: the CT survey of undisturbed oceanic islands; current research in India and its relevance to conservation.

No. 18 – Survival Service Commission Session . . $3.00
Problems of threatened species.

No. 19 – National Parks Commission Sessions . . . $3.00
- A. The National Park situation in Southern Asia, with special reference to the role, management, and economic and social functions of national parks in densely populated non-industrial regions.
- B. Pre-Conference Study Tours to national parks and other areas of conservation importance situated in India: reports and discussions.

No. 20 – Education Commission Sessions $3.00
Environmental conservation education among the populations of rural and woodland areas.

No. 21 – Landscape Planning Commission Session $3.00
Creative conservation in an agrarian economy.

Supplementary Papers

No. 25 – Environmental conservation education problems in India $1.50
Proceedings of the Working Meeting of the IUCN Commission on Education, held at the Forest Research Institute and Colleges, Dehra Dun, 21–22 November, 1969.

No. 27 – Proceedings and Summary of the Business resulting from IUCN's Tenth General Assembly in New Delhi, 24 November to 1 December 1969 ..... $1.50

No. 29 – Proceedings of the 2nd Working Meeting of Polar Bear specialists organized by IUCN at Morges, 2–4 February, 1970 ..... $1.50

IUCN Monographs

No. 1 – The leatherback or leathery turtle, *Dermochelys coriacea*. Compiled by Peter C. H. Pritchard $2.00

IUCN Occasional Papers

No. 1 – Proposals for nature conservation in northern Greece, by L. Hoffmann, W. Bauer and G. Müller $2.00

No. 2 – Project Aqua, a source book of inland waters proposed for conservation. Compiled by H. Luther and J. Rzóska. (Published by IBP as IBP Handbook No. 21) £2.00
(No dollar price quoted)

Programme Activities

IUCN/WWF Concern with the Fur Industry

The agreement reached by IUCN and WWF with the International Fur Trade Federation (IFTF) has recently come under fire, principally on the grounds that it does not extend wide enough protection to endangered species and could result in abuses.

IUCN/WWF are beset by the increasing polarization of attitudes within the conservation community, finding themselves accused on the one hand of being rabid protectionist organizations, and on the other of having sold out to the exploiters of wildlife.

Neither of these charges is valid. The concern of IUCN/WWF is above all to maintain – and wherever possible to enhance – the diversity of wildlife and its habitats. They will use every possible means to achieve this objective. IUCN/WWF recognize that wild animals are valued for many reasons including aesthetic, educational, scientific and commercial. They support total protection – no human interference – where needed. However, where populations of wildlife are exploited their use should be regulated and managed on a sustainable yield basis, provided of course, that such use is compatible with the basic conservation objective.

Scientific support has been given wherever it was felt it could aid conservation of natural resources. The establishment of a world-wide system of national parks and reserves is promoted in the belief that preservation of habitats is basic to saving wildlife in its full variety of forms. Scientific management of wildlife populations outside these areas is supported and the two organizations are the foremost advocates of protection of threatened species. IUCN has published and maintains the Red Data Books through a world-wide information system. It has initiated several international conventions in its efforts to achieve its goals. Directly and in association with the WWF it supports scientific studies of wild animals and their habitats so that conservation programmes for individual species may be based on sound knowledge of their biological and ecological requirements.

IUCN/WWF urge those responsible for wildlife protection and those who use wildlife, whether for recreational, commercial or scientific purposes, to use the resource on a sustainable yield basis. Dealers in wild animals, zoos, biomedical and pharmaceutical companies, research institutions, fur dealers and hide associations have been urged to consider that the perpetuation of the resource that supports their activity is in their own self-interest. Various steps have been taken over the years to seek support within these groups for measures to eliminate illicit trade and not waste or destroy the resource that supports their industry. IUCN/WWF believe that such confrontations, accompanied by an offer of co-operation and counsel, are essential. Eventually, the need may lessen as abuses are brought under control by international agreement and IUCN/WWF can expend their energies in new areas of need.

On this basis IUCN's Survival Service Commission and the WWF entered into discussions with the IFTF to seek that organization's backing in halting the trade in illegally taken furs and to ban the use of furs of threatened wild animals. After protracted and detailed negotiations, partial agreement was reached. A complete ban on trade in the furs of five species was pronounced together with a moratorium on trade in two others, pending a scientific study of their ability to withstand further commercial exploitation. (See IUCN Bulletin ***2*** (16) 137; ***2*** (21) 183; and *3* (1) **3**.) Negotiations are continuing and field studies are presently underway in both South America and Africa to determine the biological, economic and legal status of spotted cats and other threatened species. IUCN/WWF will continue to attack this problem on every front until a solution is found; one that will assure the perpetuation of all wild species in healthy habitats.

Project planned on conservation of Seychelles marine environment

At the request of the government of the Seychelles, a survey project originally submitted to World Wildlife for funding, is being planned under which local authorities would be assisted with technical and scientific advice for establishment of the first Marine National Park in the area. The proposed park could conserve marine life of all kinds and protect the reeds and shores from damage and disturbance.

The project would also survey other areas suitable for marine parks and reserves and provide advice on policy for their management.

A well-qualified UK scientist has been selected for the assignment which is expected to require about three months. Because of local weather conditions, it is hoped the work can be completed by early spring. Funds to support the work were still being sought at the end of January.

Tai Forest Reserve nears National Park status

Word has reached IUCN that the President of Ivory Coast has decided to set aside 250,000 ha of the huge Tai Forest Reserve as a National Park. Details have not been disclosed.

In September 1971, IUCN submitted to the Government of Ivory Coast a survey report which had been prepared on the basis of field studies by Dr. Urs Rahm of Basle. The World Wildlife Fund financed this survey as the first stage in the preparation of a management plan for the Reserve as a National Park. (See Bulletin **2** (19) for more details.)

List of marine parks

Preparation of a world list of marine parks, with a comprehensive description of every area, has been undertaken as a new IUCN project. Relevant reports and publications from countries where marine parks may exist would be welcome documentation and should be addressed to the Executive Officer, International Commission on National Parks, at IUCN, Morges.

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World Wildlife Fund News

Fund aid for the Camargue

The World Wildlife Fund formally presented a cheque for 1,000,000 French francs to the French Government on 7 January to assist the purchase of land to consolidate the famous nature reserve of the Camargue at the mouth of the Rhone.

The 300-square mile delta of the Rhone is one of Europe's greatest natural treasures, where the flora and fauna of the Mediterranean and Africa meet those of Northern Europe in a unique biotope formed by the interaction of the salt water and the silt-laden river.

Although it has long been a protected area, ownership remained in the hands of a salt company which has now agreed to donate part of the land to the Government and to hand over a further area, partly by sale, and partly in exchange for exploitable land elsewhere. The area purchased, together with surrounding land, will form a regional nature park.

Conferences and Meetings

AAAS Symposium on National Parks

The U.S. National Park Service sponsored symposium on research in the national parks was held at Philadelphia, Pennsylvania, 28–29 December 1971, as part of the annual conference of the American Association for the Advancement of Science. Papers reviewed work on grizzly bear management, elk populations and vegetation change in Yellowstone, the use of fire for managing *sequoia* forests, the management of giant cactus vegetation, long-term studies of wolf-moose relationships on Isle Royale, and in a panel discussion a look at the future of U.S. national parks. IUCN was represented by Dr. R. F. Dasmann who gave the keynote address on "Man and Nature in the National Parks".

African Wildlife Working Party

IUCN will be represented at the meeting of the FAO Ad Hoc Working Party on Wildlife Management to be held in Nairobi, Kenya, 1–6 February 1972. The meeting will be concerned with policies, achievements, and problems related to wildlife conservation in Africa and will concern itself in particular with wildlife conservation in land use planning; national parks and tourism; and with problems of threatened species. Dr. R. F. Dasmann will represent IUCN at this meeting, and will lead the discussion of a background paper on threatened species prepared by Dr. Colin Holloway.

All-Ireland bird conservation conference

The sixth of these important conferences will be held on the weekend, 3 to 5 March 1972, in Wexford. This conference is organized by the Irish Wildbird Conservancy in conjunction with the Royal Society for the Protection of Birds. Further details of the Conference may be obtained from the Irish Wildbird Conservancy, c/o Royal Irish Academy, 19, Dawson Street, Dublin, Eire.

International conservation course for teacher training

The Drapers' Field Study Centre (Rhyd-y-Creuau) at Betws-y-Coed, Caernarvonshire, North Wales, U. K., an establishment of the British Field Studies Council, will host the International Course for Teacher Training in Environmental Conservation and Education in 1972, August 2–12. The course is being organized under the sponsorship of IUCN in cooperation with the British Field Studies Council and other British organizations. It is planned for teaching staffs of teacher training colleges. The work will be conducted in English with special attention being paid to environmental interpretation.

Participants will be expected to meet their own travel costs, as well as costs of accommodation, food and tuition (estimated at £3 per day). Preliminary applications can be sent to, and further information obtained from, the Director-General, IUCN, 1110 Morges, Switzerland.

IUCN Education Workshop

Meeting at Rüschlikon in December, the Commission decided to convene a pre-General Assembly international "workshop" on environmental studies in higher education and teacher training. The meeting will be held 5–7 September 1972, at Althouse College in Canada. Persons interested in taking part should contact Dr. Paul B. Park, Althouse College of Education, 1137 Western Road, London 12, Ontario, Canada.

Book Reviews

Forrester, Jay W. (1971). World Dynamics, Wright-Allen Press, Inc., Cambridge, Massachusetts, xiii & 142 pp.

"Our greatest challenge now is to handle the transition from growth into equilibrium." (p. 112).

To expose the problem created by growth and analyse suggestions for the future, Forrester and his computers at M.I.T. present the result of 15 years of research, notably by foreseeing trends based on man's handling of environmental factors, especially his use of natural resources, human population, capital investment and pollution. Also computed is the trend of "quality of life", itself used "as measure of performance of the world system . . . derived from material standard of living, crowding, food, and pollution" (p. 60).

That danger of leaving exponential growth unchecked in our limited biosphere is eloquently explained in the introduction and the reaching of the critical threshold, called "crisis level" in the book, may take an amazingly short time for a humanity which has been conditioned by history to behave and plan very conservatively. The use of the computer, showing clearly marked trends, has the definite advantage of being convincing in its mathematical language. "The model comes out of the hazy realm of mental imagery into an unambiguous representation of statement to which all have access . . . . The great uncertainty with mental models is our inability to anticipate the consequences of interactions between the parts of a system. This uncertainty is totally eliminated in computer models." (p. 126).

Still one must adequately feed the variables to the computer and assign them values on the basis of available evidence – which often is small, particularly if a world basis is sought. It takes a certain amount of courage to do this and any assumption is liable to criticism. One may object to the rather simplified simulation of quality of life since this concept changes in different countries and social strata; but who today can objectively present a more comprehensive simulation?

The main message of the book is of course the need to reach an equilibrium. This can only be achieved by stopping growth and the author offers different models which essentially amount to substantial reductions in natural resources' usage, pollution, capital investment, food production, and birth rates. Implied is a "reversal of the emphasis on economic development" (p. 121).

These are controversial ideas but they show, at least through the simulated models, that a global aquilibrium is conceptually possible. And the author himself concludes: "Whether it can be achieved is another matter. The actions that appear to be required are not apt to be accepted easily. Probably more pressure on mankind from the environment will be required before the issues will be addressed with enough concern and seriousness. But by then time to act will be even shorter." (p. 122). *Gerardo Budowski*

Brown, Leslie (1970). African Birds of Prey. London, Collins. 320 pp., 12 plates, 18 text figures. Price £2.25.

The author, well-known as an agricultural civil servant in Kenya, is co-author with Dean Amadon of the standard volume *Eagles, Hawks and Falcons of the World,* 1959. He is, therefore, eminently qualified to produce a sound, comprehensive volume on his subject; and he has done so.

The chapter on "Numbers of African Birds of Prey" is specially interesting, based largely on the author's own experience in predator census with valuable ideas for comparative fieldwork elsewhere. There is another interesting chapter on the effects of predation. We could do with similar readable, condensed but exact handbooks on this subject for other areas. *Tom Harrisson*

International Union for Conservation of Nature and Natural Resources
1110 Morges, Switzerland

First International Scientific Conference on Vicuña Conservation*

Lima and Nazca, Peru – 13-17 December 1971

(Translated from the original Spanish)

The first International Scientific Conference on Vicuña Conservation was held in Lima and Nazca, Peru, from 13 to 17 December 1971, with the participation of official delegates from Argentina, Bolivia, Chile and Peru, representatives of international governmental organizations such as the Food and Agricultural Organization of the United Nations (FAO), the Inter-American Institute of Agricultural Sciences of the Organization of American States (IICA), non-governmental organizations such as IUCN and WWF, and of national organizations of Chile, the USA and Peru. After close examination of the problems faced by the vicuña on a regional and national scale, the participants of the Conference decided to adopt and publicize the following:

Declaration of Principles

1. The population of the vicuña, a South American wild camelid and native mammal of the high Andean zone of Argentina, Bolivia, Chile and Peru, is at present in danger of extinction, and it is a duty of the countries concerned, and for mankind in general, to join efforts in order to secure, before anything else, the perpetuation of the species. This situation, moreover, is most deplorable because, through national management of the vicuña, the present utilization of large areas of natural pastures could be intensified. In fact, the vicuña, being an animal whose rational exploitation goes back to pre-Columbian cultures, constitutes one of the most ancient examples of wise utilization of a natural renewable resource.

2. Notwithstanding the existing scientific knowledge which enables a series of actions to be undertaken immediately at a regional and national level, and successful continuance of existing programmes, it is essential to intensify research on vicuña in its wild state as well as on other native species that share its environment.

3. Once recuperation of the vicuña populations is achieved, there is no doubt that the application of scientific methods will be an exceptional opportunity to contribute towards the development of extensive regions of the Andes, by improving the quality of life of their inhabitants, especially those that are generally less favoured and live in areas where the vicuña occurs. Such a development would be based on the continuous yield of vicuña wool of the finest quality, fur and meat, as well as on the value derived from national and international tourism, and relevant scientific and educational uses.

4. The present laws of the four countries where the vicuña is found, although different in some specific aspects, all coincide in stating that this animal is considered to be national property. We may go further and state it is a legacy of mankind. Consequently, it is imperative that efforts be made to obtain maximum efficiency from present and future legislation, not only in the countries concerned, but also within the consumer countries, since the latter, through their demand, also exert pressure on the vicuña.

5. To succeed in this endeavour, it is essential that support from the populations directly concerned be rallied and that all possible means are used to promote their active participation in a cause that will ultimately result in their own improvement.

Recommendations

It is recommended that

1. The protection of the vicuña in its natural environment be reinforced through:
   a) The establishment of surveillance centres in areas where there are important populations of vicuña;
   b) International and National Parks or similar Reserves being established, managed and developed; and
   c) A greater number of institutions participating in this process.

2. Present legislation on trading, export, import, possession and transport of live vicuña or of derived products, be effectively enforced.

*The Conference was organized by IUCN in collaboration with the Dirección General Forestal de Caza y Tierras del Ministerio de Agricultura of Peru, FAO, and the World Wildlife Fund.

3. A vast educational campaign be promoted which aims to obtain the support of all sectors of the population through a better understanding of the values of vicuña and the significance of its rational management. In particular the following actions are strongly advocated:

   a) Press and broadcast campaigns should be carried out in Spanish, Quechua, and Aymara;

   b) Didactic material should be published and publicized; and

   c) Exhibitions, demonstrations, and other applications of relevant extension techniques should be mounted.

4. Research should be intensified with emphasis on the following problems and aspects:

   a) Detailed census;

   b) Competition with domesticated animals;

   c) Agrostology and pasture management;

   c) Methods of capture, transfer and repopulation;

   e) Management plans;

   f) Shearing and manufacturing;

   g) Adverse factors.

5. Ethno-sociological studies should be carried out to relate prevailing human conditions with rational management of the vicuña.

6. Tourism should be planned as part of management plans for vicuña in areas that lend themselves to such activities.

7. A programme of international co-operation should be planned to take account of the following aspects;

   a) Periodical official meetings of the countries concerned for the joint planning of programmes, for the study of legislation, and for the exchange of experiences;

   b) Joint training of technical personnel for surveillance and inspection;

   c) Make effective the recommendation of the Convention agreed between the Governments of the Republic of Bolivia and the Republic of Peru for conservation of the vicuña in order to establish a Permanent Information Centre which will function in the latter State.

8. Negotiations with the consumer countries should be extended and intensified in order to reach agreement on prohibiting the import of and commerce in products derived from the vicuña. Such measures should be abolished whenever the number of vicuñas as is estimated to have reached safe levels.

9. A joint development and research programme should be established within those countries that include areas where the vicuña occurs naturally, such a programme to be financed by appropriate international organizations, with the active participation of local institutions.

International Union for Conservation of Nature and Natural Resources
1110 Morges, Switzerland

Conclusions of the

European Working Conference on Environmental Conservation Education

Rüschlikon, near Zürich, Switzerland
15-18 December 1971

Preamble

This was the first European Conference on Environmental Conservation Education and was attended by specialists on environmental education – scientists, administrators, teachers and other educators. Besides clarifying general concepts, surveying the present situation and pointing out the needs, the Conference formulated specific recommendations for projects and programmes in environmental education related to primary and secondary levels, teacher training, higher education and out-of-school education.

It was organized by the International Union for Conservation of Nature and Natural Resources (IUCN) in co-operation with the World Wildlife Fund (WWF) and with the support of the Swiss Federal Authorities and the Canton of Zürich, the MIGROS-Genossenschafts-Bund, the Swiss League for the Protection of Nature, the Swiss National Appeal of WWF, and the Swiss National Commission for UNESCO. The Conference was held from 15 to 18 December 1971 at the Gottlieb Duttweiler Institute, Rüschlikon, near Zürich, Switzerland.

A total of 109 participants from 21 European countries (Austria, Belgium, Bulgaria, Czechoslovakia, Denmark, Federal Republic of Germany, Finland, France, Greece, Italy, Luxembourg, Netherlands, Norway, Poland, Rumania, Spain, Sweden, Switzerland, UK, USSR, Yugoslovia); representatives of nine international organizations (United Nations, UNESCO, FAO, Council of Europe, OECD, IUBS, Boy Scouts World Bureau, IYF, Mediterranean Association for Marine Biology and Oceanography) and observers from three countries (Australia, Canada, USA) in other parts of the world attended.

Under the Chairmanship of Dr. L. K. Shaposhnikov (USSR) the Conference developed its programme of work through topic-oriented plenary sessions, and smaller working groups on important areas of environmental education.

The participants considered that the Conference had provided an invaluable opportunity to exchange information on the methodology and implementation of environmental education in the different European countries. The Conference proposed practical programmes in environmental education adapted to meet the needs of education systems in a wide variety of situations.

General Recommendations of the Conference

Whereas environmental conservation education, under present circumstances of increased impact of man on the natural environment, has become a matter of urgent importance in all countries of Europe, and

Whereas we recognize the aim of this education is to create a responsible attitude among the entire population towards the use and care of natural resources, and the protection of the environment as a whole against damage from pollution and other dangers.

We have reached the consensus that the implementation of environmental conservation education should include the following activities:

- appropriate education and instruction in school courses at all levels;
- education and training in environmental matters in institutes of higher education of all kinds;
- out-of-school involvement of young people and adults in practical environmental conservation activities;
- in-service education and training of teachers and others concerned with general and out-of-school education such as youth leaders;
- the training of professional people concerned with environmental affairs, such as statesmen and administrators, as well as planners, architects, engineers and technologists;
- the education of the public at large by the use of mass information media and other methods.

We further *recognize* that to achieve the best possible effect, each country should, bearing in mind its socio-cultural, economic, and bio-physical conditions, develop a comprehensive programme of environmental conservation education involving all sectors of the community and

We *agree* that the following issues require attention in the implementation of such a programme:

- environmental conservation education should be an integral part of the complex of measures now being developed for the use and care of natural resources;
- such education should aim to create an awareness of the responsibility of individuals, as well as of society as a whole, for the conservation of the environment;

– legislation should be considered which obliges educational establishments of the country concerned to establish and/or extend programmes for environmental conservation education.

Whereas environmental conservation education, appearing in the first place as an internal national task which should involve all sectors of the community is, simultaneously, an important international activity because the future of our Earth depends upon the correct attitude of mankind to the natural environment, the social progress of nations, their co-operation, and peace on Earth are fully possible only when the condition of man's environment is beneficial to mankind in cultural and aesthetic as well as material terms. We recognize in this context the great importance of UNESCO's "Man and Biosphere" Programme, and *agree* that it is necessary for comprehensive investigations in the field of environmental conservation education to be included in this Programme, and to be carried out by a co-ordinated effort among various countries.

We also *recognize* that, in practice, international work in environmental conservation education should entail the exchange of information and of programmes, the further development of existing activities, the convening of conferences and meetings, the organization of international courses and camps for students and young professionals, and of workshops and seminars for specialists in various fields, the preparation and publication of international books, booklets, periodicals and teaching aids, and other profitable forms of co-operation.

Whereas international activities in the field of environmental conservation education have received substantial impetus in many parts of the world by the initiative of the International Union for Conservation of Nature and Natural Resources (IUCN) which in 1949 established, within its structure, the Commission on Education, which has prepared educational aids, issued important publications with the support of UNESCO, organized several conferences, meetings and workshops in various regions of the world, and disseminated information on environmental conservation education in various countries,

We *recognize* the present situation when, in all countries, much attention is given to environmental issues, including the conservation of nature,

We *agree* that IUCN has a role of growing importance in all parts of the world in dealing with these problems, especially in the field of environmental education, and

We *recommend* that every measure possible should be implemented to strengthen the activities of the Union.

Whereas the 17th Session of the UN General Assembly in its Resolution entitled Economic Development and Conservation of Nature (1962) expressed the hope that immediate measures would be taken to assist IUCN and international organizations pursuing analogous objectives,

We *recognize* that the UN Conference on the Human Environment to be held in Stockholm in 1972 is aimed at giving further consideration to world-wide problems of man's impact on the environment and

We *recommend* that the UN Conference review the implementation of past UN decisions in this connection; confirm the vital role of IUCN in its capacity as a leading, independent scientific advisory body concerned with world-wide problems of use and care of the environment; and put forward concrete proposals to provide support to the Union to expand its activities.

Specific Recommendations of the Conference

1. Primary and Secondary Education

   We *recommend* that:

   a) all children in nursery schools (kindergartens) and primary schools should have opportunities for contact with the plants, animals and people with whom they share the environment.

   b) special attention should be paid to study of the urban environment and wherever possible this should be studied concurrently with that of plants and animals.

   c) during the training of teachers for nursery schools and primary schools more attention should be paid to environmental education, including field biology and ways of using teaching facilities such as schoolgrounds, parks and the surrounding community.

   d) all children during their secondary schooling (12 to 18 years) should be provided with a scheme of studies designed to achieve the social and scientific objectives implied in the IUCN Foresta definition of environmental education, as set out in the Conference papers. The methods adopted to achieve these objectives should be appropriate to the educational structures of the countries concerned.

2. Teacher Training

   We *recognize* that teacher training forms one of the most important and significant aspects in the development of environmental education programmes, and we *recommend* that:

   a) the training of teachers provides them with essential basic knowledge of ecological fact and an adequate background of sociology and its relationships to human ecology.

   b) efforts should be made to develop in the teacher a critical awareness of environmental problems to enable him to provoke responsible attitudes concerning environmental matters in his pupils.

   c) environmental conservation is recognized as an essential part of teacher training, and that developments started in pre-service training should be continued by in-service training.

   d) as teacher training in environmental education involves the use of many techniques and methods, all prospective teachers should be given training in the use and evaluation of pedagogic methods, including those relating to interdisciplinary approaches and team teaching.

   e) media banks be established at the national and international level for the exchange of information, training aids and teaching materials.

3. Training of Other Educators

   We *recommend* that:

   a) young people should be actively involved in environmental problems through organized groups and that such groups should have specially trained leaders in order to operate effectively.

   b) special training courses of youth leaders, "animateurs" and other informal educators in environmental conservation should be organized as a matter of urgency.

c) IUCN organize as a project an international course in 1973 for those responsible for the training of youth leaders and informal educators.

d) international organizations award grants for the international exchange of youth leaders and informal educators. This exchange should be directly related to involvement with environmental issues.

4. Higher Education

We *recognize* the growing importance of ecology and related science in planning, use, management and development of the environment, including the control of pollution, and we *recommend* that:

a) government authorities and institutes of higher education, professional training and research collaborate to give urgent attention to the vital significance of basic and applied ecological science to the community, both in terms of creating a new awareness and appreciation amongst leaders in society of the principles governing the use of natural resources, and in providing appropriately trained personnel to conduct ecological research, to apply the findings of science and to advise those who are concerned with public affairs affecting the environment, and that international co-operation be encouraged in this field.

We further *recognize* that the complexity of our environment, resulting from the interaction of elements of the natural, economic and social systems, is such that it is increasingly appropriate to emphasize a global and integrated approach to the problems and to consider them not merely in the short and medium term but also in the long-term perspective; therefore, *we recommend* that

b) a general ecological training applied to the problems of the environment be given in all the university faculties and institutes of higher education concerned with one aspect or another of land-use planning, and compulsory courses in applied ecology for environmental conservation ("sosi-ecology") and for the management of natural resources be included in faculty programmes for civil engineering, as well as for all industrial specialists.

c) the creation of university education and research institutes should be undertaken with the following aims: to secure a thorough interdisciplinary training; to pursue integrated research in this field; and to put at the disposal of all faculties which need them courses in environmental ecology.

We also *recognize* the necessity of having available qualified personnel in the environmental field and we *recommend* that:

d) the responsible government departments make provisions enabling specific degrees in environmental science to be awarded.

e) universities or specialized institutions ensure the re-training and continuing education of staff in administration, industry, political and economic spheres, and in the information media, by the organization of study sessions (courses, seminars, practical work, excursions, etc.) in order to make them aware of the urgency with which they must take account of ecological aspects in all the decisions they have to make.

f) university student associations be encouraged to hold more interdisciplinary scientific field courses and that this type of activity be undertaken also at the international level.

5. Out-of-School Environmental Education for Children and Youth

We *recognise* the special role of out-of-school conservation activities in developing motivation towards a sense of responsibility for the environment, and we *recommend* that:

a) governments should establish Co-ordination and Information Centres for all conservation matters, with special emphasis on out-of-school conservation education.

b) government and local authority youth funds should have special sections reserved for environmental activities to help young conservation groups to develop.

c) governments should make it possible for individuals to give service to the community in the form of work in the environmental field as an alternative to compulsory military service.

d) a European working conference on methodology in out-of-school environmental activities be convened as a matter of urgency.

e) European Governments contribute to an intergovernmental trust fund for youth activities in environmental conservation at a European level, to be administered by the Council of Europe and the Council on Mutual Economic Assistance (CMEA).

We also *recognize* the unique role of the International Youth Federation for Environmental Studies and Conservation (IYF) and its member organizations in organizing out-of-school activities for young people in the field of conservation and environmental studies, and in order that IYF's activities may continue to develop and reach a broader section of young people, *we recommend* that:

f) governments and conservation organizations find financial means to support IYF.

6. Outdoor Facilities

We *recognize* that outdoor education has a vital contribution to make in environmental education and we feel that it is essential for every child to have direct contact with his environment; therefore, we *recommend* that:

a) sufficient facilities be provided to enable students at all levels to make direct studies of the environment outside the confines of the building; this involves the provision of (i) opportunities to be out of school for periods ranging from a few hours to longer periods involving residence, (ii) sites, localities, buildings, structures, trails and equipment necessary for outdoor education, (iii) fully trained staff to cater for the needs of students and to manage, control and organize sites and localities used for field teaching. No student should be excluded from the use of facilities for outdoor education on the grounds of lack of finance.

We also *recognize* that field teaching involves special techniques and responsibilities and presents a range of problems not experienced in formal teaching situations; therefore we *recommend* that:

b) authorities should employ full-time officers to advise teachers and to co-ordinate and assist in the organization of outdoor education and to provide in-service training in field-teaching techniques and methods, and at international level IUCN establish a research project to examine and validate field-teaching techniques and methodology.

We further *recommend* that:

c) every school should have suitable nature study areas attached to it or within easy access, and that, in the development of new schools, specific provision for such facilities be incorporated at the planning stage, educationalists make every effort to secure the co-operation for educational purposes of all interests concerned with access to and use of the environment, both urban and rural, and authorities concerned with urban and rural planning and development be strongly urged to consider aspects of field and environmental education in the development of schemes.

We *recognize* that, though there is confusion about the precise definition of "nature trail", such trails and paths can have considerable educational value if their organization and use is carefully planned, preferably by educational specialists, and we *recommend* that:

d) IUCN make a study of the use and organization of nature trails as educational facilities.

We further *recommend* that:

e) access to certain areas of special ecological interest and of delicate ecological balance should be restricted.

f) the educational possibilities which exist in the involvement of students in such schemes as land reclamation, motor-way projects, urban renewal and the establishment of recreation areas be investigated.

7. Co-ordination at the National Level

We *recommend* that:

a) there should be created at the national level, in countries where such structures are not yet in existence: (i) a Centre of Information and Research on the Environment with the objectives of stimulating the activities of centres which are currently working on environmental problems; of subsidizing and/or undertaking environmental research; of co-ordinating information and of providing the essential basic data for decision-making; and of promoting integrated studies on the environment, (ii) a Regulatory Structure to function between the proposed Centre and the bodies carrying out the work, conceived in such a way as to influence the processes of decision-making.

b) governments arrange more thorough consultation with interdisciplinary groups of experts working in the environmental field as well as making use of the services of environmentally trained academics, and that governments should pay more attention to the interventions of groups or associations concerned with the improvement of the quality of the environment."

Note: Attention is drawn to the full reports of the Working Groups on the above topics which contain schemes, charts and explanatory details essential to the practical implementation of some of the above recommendations. These full reports also list several important proposals which have had to be omitted from the above list for reasons of space.

The Final Report of the 1971 European Working Conference on Environmental Conservation Education will be available at the beginning of February 1972 from the IUCN Secretariat, 1110 Morges, Switzerland.

The Proceedings of the Conference will be published later this year and inquiries should be made to the IUCN Secretariat.